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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,776	06/30/2003	Kei Yamamoto	204552028900	8129

7590 11/28/2008
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EXAMINER

FORDE, DELMA ROSA

ART UNIT	PAPER NUMBER
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2828

MAIL DATE	DELIVERY MODE
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11/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/608,776	Applicant(s) YAMAMOTO ET AL.	
	Examiner DELMA R. FORDE	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-22 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/17/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Appeal Brief

In view of the Appeal Brief filed on 07/03/2008, PROSECUTION IS HEREBY REOPENED. *A new ground of rejection is set forth below.*

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Andrea Oster, et al. “Gain spectra measurement of strained and strain-compensated InGaAsP-AlGaAs Laser structure for $\lambda \approx 800$ nm.”

Regarding claims 1, 5, 8 and 23, Oster (Examiners includes Tables I and II, see next page) discloses semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm (see abstract and page 635 Table II and first paragraph of “BA Lasers”) in which at least a lower clad layer (see Table I on page 632) a lower guide layer (see Table I on page 632, the reference call “waveguide”), an active region (see Table I on page 632) and upper guide layer (see Table I on page 632) and an upper clad layer (see Table I on page 632) are supported by GaAs substrate (see Table I on page 632), the active region having a quantum well (see Table I on page 632) structure in which one or more well layers and barrier layers (see Table I on page 632) are stacked, wherein one or more well layers are formed of InGaAsP (see

Table I on page 632) and said barrier layer are formed of, GaAsP (see Table I on page 632) and said upper and/or lower guide layer is formed of $\text{Al}_z\text{Ga}_{1-z}\text{As}$ ($0.20 < z < 1$) (see Table I on page 632).

TABLE I
LAYER SEQUENCE OF LASER STRUCTURES UNDER INVESTIGATION

layer	composition	thickness (nm)
contact	p-GaAs	
cladding	p- $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$	1800
waveguide	p- $\text{Al}_{0.65}\text{Ga}_{0.35}\text{As}$	500
	$\text{Al}_{0.65}\text{Ga}_{0.35}\text{As} \rightarrow \text{Al}_{0.50}\text{Ga}_{0.50}\text{As}$	10
active region	A $\text{In}_{0.16}\text{Ga}_{0.84}\text{As}_{0.72}\text{P}_{0.28}$	18
	B $\text{In}_{0.28}\text{Ga}_{0.72}\text{As}_{0.5}\text{P}_{0.5}$	13
	C $\text{In}_{0.24}\text{Ga}_{0.76}\text{As}_{0.75}\text{P}_{0.25}$	5
	D $\text{GaAs}_{0.77}\text{P}_{0.23}$	5
	$\text{In}_{0.23}\text{Ga}_{0.77}\text{As}_{0.73}\text{P}_{0.27}$	5
	$\text{GaAs}_{0.77}\text{P}_{0.23}$	5
waveguide	$\text{Al}_{0.55}\text{Ga}_{0.45}\text{As} \rightarrow \text{Al}_{0.65}\text{Ga}_{0.35}\text{As}$	10
	B- $\text{Al}_{0.65}\text{Ga}_{0.35}\text{As}$	500
cladding	n- $\text{Al}_{0.5}\text{Ga}_{0.5}\text{As}$	2000
buffer	n-GaAs	
substrate	n-GaAs	

TABLE II
CHARACTERISTIC DATA FROM PULSED BA LASER MEASUREMENT
(PULSE LENGTH: 500 ns, DUTY CYCLE: 1:400)

Sample	A	B	C	D
ξ_{ex} (%)	0.1	0.6	1.0	1.0
η_{R} (%)	-	-	-	-1.0
λ (nm)	796	808	791	797
η_{I} (%)	75	79	77	92
α_1 (cm^{-1})	≈ 1	≈ 1	≈ 1	≈ 1
j_{th} (A cm^{-2})	206	128	150	137
$\Gamma \cdot G_0$	18.5	14	19	18

Art Unit: 2828

Regarding claims 2 and 5, Oster discloses a value of z representing a mole fraction of Al in the group III element of said upper and/or lower guide layer is larger than 0.25 (see Table I on page 632), a value of z , where a value of z represents a mole fraction of Al in the group-III elements of said upper and/or lower guide layer, of at least a portion in contact with a barrier layer of said upper and/or lower guide layer is smaller than 0.4. (See Table I on page 632).

Regarding claims 3, and 4, Oster discloses a upper and lower cladding (see Table I on page 632) contain Al, and a value of z , wherein a value of z represent a mole fraction of Al in the group-III elements of said upper and/or lower guide layer, is smaller than a value of an Al mole fraction of said upper and lower clad layer and the value of z varies stepwise or continuously and is such a fashion as to increase with increasing nearness to said upper and lower clad layers (see Table I on page 632).

Regarding claims 6 – 8, Oster discloses a one or more well layers and barrier layer have a compressive or tensile strain (abstract and see page 623 third paragraph of “II. Experimental”) and the semiconductor laser device is used as a light-emitting device (page 632, II. Experimental: III. “Gain measurement method”, third paragraph).

Allowable Subject Matter

Claims 9 – 22 are allowed.

The following is an examiner's statement of reasons for allowance: Claim 9 recites a semiconductor laser structure including the specific structure limitation of barrier layer are formed of an $\text{In}_{1-x}\text{Ga}_x\text{As}_{1-y}\text{P}_y$ having a band gap energy larger than that of said well layers, and there hold relationship that $0 < x < 1$; $0.02 < y < 0.75$ and $|(a_2 - a_1) / a_1| * 100 \leq 0.65$, where a_1 is lattice constant of said one or more well layers, and a_2 is lattice constant of said barrier layers, which is neither anticipated or disclosed nor suggested in any piece of available prior art, which is neither anticipated nor obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments with respect to claims 1 – 22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DELMA R. FORDE whose telephone number is (571)272-1940. The examiner can normally be reached on M-T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun O. Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DELMA R. FORDE/
Examiner, Art Unit 2828

/Minsun Harvey/
Supervisory Patent Examiner, Art Unit 2828